**THIS OPINION WAS NOT WRITTEN FOR PUBLICATION**

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 43

UNITED STATES PATENT AND TRADEMARK OFFICE

_____

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

_____

**Ex parte** THOMAS R. COVEY, ERIC HUANG
and JACK HENION

_____

Appeal No. 95-2726
Application 07/994,477[1]

_____

HEARD: MARCH 9, 1999

_____

Before GRON, ELLIS and LORIN, **Administrative Patent Judges**.

ELLIS, **Administrative Patent Judge**.

**DECISION ON APPEAL**

This is an appeal under 35 USC § 134 of the final rejection of claims 1 through 8, all the claims pending in the application. Claim 1 is illustrative of the subject matter on

---

[1] Application for patent filed December 21, 1992. According to the appellants, this application is a continuation of Application 07/354,617, filed May 19, 1989, now abandoned.

appeal and reads as follows:

1. A method of analyzing a protein comprising the steps of:

(1) adding trypsin to said protein to form a liquid phase mixture of trypsin and said protein;

(2) optionally reducing the disulfide linkages and alkylating the resulting sulfhydryl groups of said protein either before or after said step (1);

(3) allowing the trypsin to digest said protein long enough to cleave said protein into tryptic fragments of less than 4000 daltons in said liquid phase;

(4) ionizing a portion of the digested mixture by ion evaporation to produce gas phase ions of said tryptic fragments from said liquid phase, said gas phase ions being predominantly doubly charged with one charge at each end of said double charged ions,

(5) and analyzing said gas phase ions of said tryptic fragments by sequentially selecting therefrom doubly charged ions in a first mass analyzer, fragmenting such selected ions by collision in a second mass analyzer to produce daughter ions, and then analyzing said daughter ions in a third mass analyzer.

The references relied on by the examiner are:

Henion et al. (Henion) 4,861,988 Aug. 29, 1989
(filed Sept. 30, 1987)

Yost et al. (Yost), "Triple Quadrupole Mass Spectrometry for Direct Mixture Analysis and Structure Elucidation," **Anal. Chem.,** vol. 51, pp. 1251A-1264A (1979).

Vestal, "High-Performance Liquid Chromatography-Mass Spectrometry," **Science,** vol. 226, pp. 275-281 (1984).

Hunkapiller et al. (Hunkapiller), "Contemporary Methodology for Protein Structure Determination," **Science,** vol. 226, pp. 304-311 (1984).

Biemann, "Mass Spectrometric Methods for Protein Sequencing," **Anal. Chem.,** vol. 58, pp. 1288A-1300A (1986).

Olivares et al. (Olivares), "On-Line Mass Spectrometric Detection for Capillary Zone Electrophoresis," **Anal. Chem.,** vo1. 59, pp. 1230-1232 (1987).

Bruins et al. (Bruins), "Ion Spray Interface for Combined Liquid Chromatography/Atmospheric Pressure Ionization Mass Spectrometry," **Anal. Chem.,** vol. 59, pp. 2642-2646 (1987).

The claims stand rejected under 35 USC § 103 as being unpatentable over Biemann and Yost in view of Bruins, Henion, Vestal, Olivares and Hunkapillar.

Having carefully considered the record before us which includes, ***inter alia***, the specification, the appellants' main Brief (Paper No. 33), Reply Brief (Paper No. 35), the examiner's Answer (Paper No. 34) and the declarations of Drs. Covey, Aebersold and Carr (Paper Nos. 20, 27 and 29, respectively), we find ourselves in substantial agreement with the appellants' position. Accordingly, we **reverse** the rejection.

In the case before us, we need not determine whether the

examiner has established a ***prima facie*** case of obviousness. Rather, if we assume, ***arguendo***, that such is the case, we would find that the examiner had erred in not properly considering the appellants' evidence of unexpected results. We caution the examiner that a ***prima facie*** case is merely a presumption of unpatentability; i.e., a legal inference which shifts the burden of going forward to the applicant. ***In re Piasecki***, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). It is well established that, in rebuttal, a patent applicant may submit objective evidence of nonobviousness. Such evidence can include unexpected results, commercial success, licensing, long-felt need in the industry, etc. ***Graham v. John Deere Co***., 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966). In the face of such evidence, the examiner must

> start over. *** An earlier decision should not, as it was here, be considered as set in concrete, and applicant's rebuttal evidence then be evaluated only on its knockdown ability. Analytical fixation on an earlier decision can tend to provide that decision with an undeservedly broadened umbrella effect. Prima facie obviousness is a legal conclusion, not a fact. Facts established by rebuttal evidence must be evaluated along with the facts on which the earlier conclusion was reached, not against the conclusion itself. [***In re Piasecki***, 745 F.2d at 1472, 223 USPQ at 788 quoting, ***In re Rinehart***, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976)].

Here, we find that statements by the examiner such as:

the unexpected results are "mechanism dependent;"[2] "[i]t is not simply a question of whether the person of ordinary skill in the art would expect to obtained improved results by analyzing the doubly charged ions as claimed herein, but rather whether a person of ordinary skill in the art would be [sic, would have been] motivated to perform the analysis steps as claimed;"[3] and "a person of ordinary skill in the art would have expected success at analyzing tryptic digests by mass spectrometry, albeit not necessarily at the level of success actually achieved by appellants;"[4] to be diametrically opposed to the case law quoted above.

The examiner acknowledges on p. 3 of the Advisory Action mailed February 2, 1994 in Paper No. 30, that the declaration of Dr. Covey shows unexpected results. According to the examiner, he "is aware of the advantageous results obtained and bears no argument with the excellent results obtained." ***Id***. The examiner further acknowledges that "it may not have been predictable, trusting Drs. Aebersold and Carr, that these

---

[2] Answer, p. 12, lines 1-2.

[3] Answer, p. 14, lines 17-21.

[4] Answer, p. 15, lines 8-11.

doubly charged parent peptides would give superior results to singly charged peptides." Answer, p. 12, lines 18-21. Although the examiner criticized some of the data set forth in the declarations or Drs. Aebersold and Carr as being expected in view of the applied prior art,[5] he did not challenge the appellants' response in the Reply Brief[6] that he had misinterpreted the sections of the references relied upon.

In view of the examiner's admission that the appellants have demonstrated unexpected results, and his failure to contest the appellants' interpretation of the applied prior art, we find the rebuttal evidence to be persuasive. Accordingly, we hold that the claimed subject matter would not have been obvious to those of ordinary skill in the art at the time the application was filed.

The decision of the examiner is reversed.

***REVERSED***

)
Teddy S. Gron )

[5] Answer, pp. 13-17.

[6] Reply Brief, pp. 2-4.

| | | |
|---|---|---|
| Administrative Patent Judge | ) | |
| | ) | |
| | ) | |
| | ) | BOARD OF PATENT |
| Joan Ellis | ) | |
| Administrative Patent Judge | ) | APPEALS AND |
| | ) | |
| | ) | INTERFERENCES |
| | ) | |
| Hubert C. Lorin | ) | |
| Administrative Patent Judge | ) | |

dm

Merchant, Gould,Smith, Edell
Welter & Schmidt, P.A.
3100 Norwest Center
90 South Seventh Street
Minneapolis, Minnesota 55402